

The attached papers of “Replacement Sheets” and “Annotated Sheets Showing Changes” include changes made to the Figure descriptions for Figures 7-12.

## Annotated Sheets Showing Changes

### **REMARKS**

Entry of this amendment is respectfully requested. Claims 1 to 20 and 22 are pending in the instant application. The Applicants herein cancel Claims 2-11, 13-17, and 21-22, without prejudice or disclaimer of the subject matter therein. Claims 1, 12, and 18 to 20, stand rejected. Claims 1, 12, 18, and 20 are amended herein. Support for the amendments can be found, for example, at page 7. No claims stand objected to. Applicants respectfully request reconsideration and withdrawal of the rejections for the reasons set forth herein. There is no issue of new matter.

The Office Communication of January 12, 2007, states that the amendment of 12/08/2005 attempts to delete Seq ID Nos from claims that were never recited in prior listings of the claims. This was a mistake made without any deceptive intention. The last claim amendment was made from an old claim set from a parent application. The claim amendments filed with this response are in relation to the as filed pending claim set.

In addition, the amendments to the drawings provided herein are in relation to the substituted specification filed on September 27, 2002.

The amended claims are directed to mutant allergens of Pro-DerP1. Pro-DerP1 is an enzymatically inactive pro-form of DerP1. None of the prior art documents disclose mutant versions of the *D. pteronyssinus* Pro-DerP1 protein. Further, none of the documents suggest introducing mutations into the *D. pteronyssinus* Pro-DerP1 protein in order to obtain an enzymatically inactive protein which has reduced allergenicity compared to wild type DerP1 protein, and which may be used to treat an individual suffering from an allergy to the DerP1 protein.

### **Claim Rejections Under 35 USC § 102**

Claim 1 stands rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Foster *et al.*. The Examiner suggests that a recombinant bee venom mutant allergenic enzyme anticipates (original) Claim 1.

Without conceding the validity of this rejection, and to further prosecution, the Applicants herein amend the rejected claim in a manner that obviates the asserted basis for this rejection. The Applicant respectfully asserts that, due to the amendments made to the existing claims, this rejection is now moot. Specifically, the Applicant herein amends Claim 1 to recite “A recombinant mutant pro-DerP1 allergen from *Dermatophagoides pteronyssinus*...”.

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Claim 1 stands rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Robinson *et al.*. The Examiner suggests that Robinson teaches a substitution encompassed by SEQ ID NO. 2.

Without conceding the validity of this rejection, and to further prosecution, the Applicants herein amend the rejected claim in a manner that obviates the asserted basis for this rejection. The Applicant respectfully asserts that, due to the amendments made to the existing claims, this rejection is now moot. Specifically, the Applicant herein amends Claim 1 to recite “A recombinant mutant pro-DerP1 allergen from *Dermatophagoides pteronyssinus* wherein said mutant allergen comprises an alanine substitution of the Cys132 residue of pro-DerP1.” The substitution described therein (SEQ ID NO. 1) is not described in the Robinson *et al.* reference.

In view of the foregoing remarks, the Applicants respectfully requests that the Examiner withdraw his rejections of Claim 1 under 35 U.S.C. § 102(b).

Claims 1 and 18 stand rejected under 35 U.S.C. §102(e) as being allegedly anticipated by US 6,287,559. The Examiner suggests that ‘559 teachings of vespid allergen mutations with adjuvants for treating allergy stings anticipates (original) Claim 1.

Without conceding the validity of this rejection, and to further prosecution, the Applicants herein amend the rejected claim in a manner that obviates the asserted basis for this rejection. The Applicant respectfully asserts that, due to the amendments made to the existing claims, this rejection is now moot. Specifically, the Applicant herein amends Claim 1 to recite “A recombinant mutant pro-DerP1 allergen from *Dermatophagoides pteronyssinus*...”.

In view of the foregoing remarks, the Applicants respectfully requests that the Examiner withdraw his rejections of Claim 1 under 35 U.S.C. § 102(b).

### **Claim Rejections Under 35 USC § 103**

Claims 1 and 18-20 stand rejected under 35 USC §103(a) as being allegedly unpatentable over US 6,287,559 in view of US 5,762,943. The Examiner posits that it would have been obvious for one skilled in the art to add 3D-MPL to vespid allergen mutations to make the allergen immunotherapy safer.

Without conceding the validity of this rejection, and to further prosecution, the Applicant herein amends the pending claims terms to obviate the asserted basis for this rejection. Specifically, the Applicant has amended Claim 1 to recite “A recombinant mutant

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pro-DerP1 allergen from *Dermatophagoides pteronyssinus* wherein said mutant allergen comprises an alanine substitution of the Cys132 residue of pro-DerP1". The Applicant respectfully asserts that, due to the amendments made to the existing claims herein, this rejection is now moot.

In view of the foregoing remarks and claim amendments, the Applicant respectfully requests that the Examiner withdraw his rejection based on Claims 1 and 18-20 under 35 U.S.C. §103.

**Claim Rejections Under 35 USC § 112**

Claims 1 and 18-20 stand rejected under 35 U.S.C. § 112, first, as allegedly failing to comply with the written description requirement. Specifically, the Examiner suggests that "the scope of claim 1 is enormous" and that the claims are drawn to any and all allergens.

Without conceding the validity of this rejection, and to further prosecution, the Applicants herein amend the pending claims to obviate the asserted basis for this rejection. The Applicants respectfully asserts that, due to the amendments made to the existing claims herein, this rejection is now moot. Specifically, the Applicant herein amend Claims 1 and 12 to recite "A recombinant mutant pro-DerP1 allergen from *Dermatophagoides pteronyssinus*...".

In view of the foregoing remarks and claim amendments, the Applicants respectfully requests that the Examiner withdraw the rejections of Claims 1 and 18 - 20 under 35 U.S.C. § 112, first paragraph.

Claim 12 stands rejected under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

Specifically, the Examiner suggests that claim 12 recites a protein, but recites a nucleic acid sequence to describe a protein.

The Applicants assert that Claim 12 is directed to the protein sequence found in SEQ ID NO. 1. This sequence is a protein sequence as filed in corrected sequence listing filed on April 11, 2006, and the original specification.

In view of the foregoing remarks and claim amendments, the Applicants respectfully requests that the Examiner withdraw the rejections of Claim 12 under 35 U.S.C. § 112, second paragraph.

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The Applicants reserve the right to prosecute, in one or more patent applications, the claims to non-elected inventions, the claims as originally filed, and any other claims supported by the specification. The Applicants thank the Examiner for the Office Action and believe this response to be a full and complete response to such Office Action. Accordingly, favorable reconsideration and allowance of the pending and new claims is earnestly solicited. If it would expedite prosecution of this application, the Examiner is invited to confer with the Applicants' undersigned agent.

Respectfully submitted,

A handwritten signature in black ink, reading "Jason C. Fedon". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Jason C. Fedon  
Agent for Applicants  
Registration No. 48,138

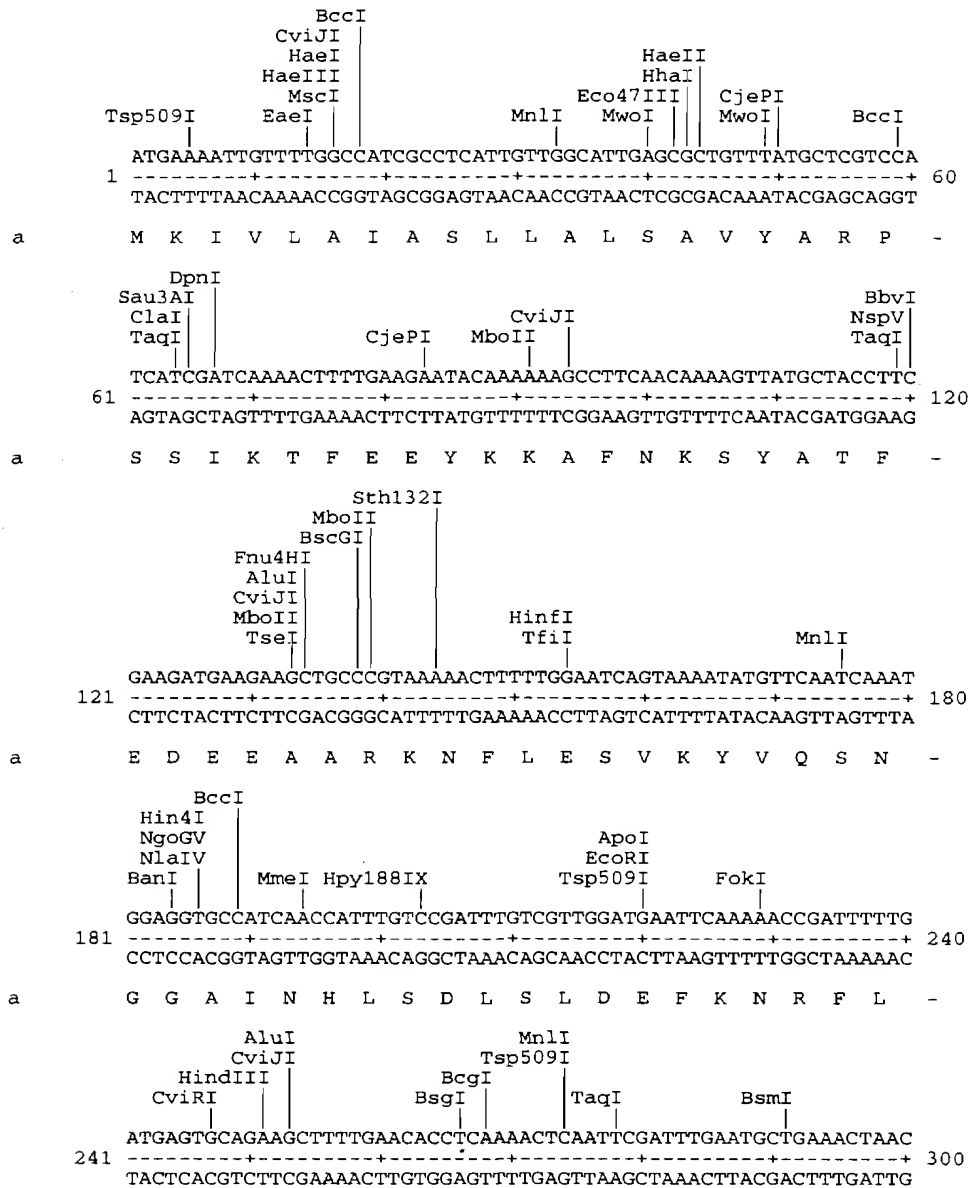
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Attachments

**FIGURE 7: DerP1 restriction map of SEQ ID NO. 6.**

(Linear) MAP of: DerP1.seq check: 7532 from: 1 to: 963

ID DP11695 standard; RNA; INV; 1099 BP.



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a M S A E A F E H L K T Q F D L N A E T N -

BpmI PstI BsaXI  
CviRI AclI  
Cac8I CviJI AluI  
SfcI MspAII CviJI  
BcgI CjePI PvuII ClaI  
CjePI MwoI MaeIII  
Tsp45I

301 GCCTGCAGTATCAATGGAAATGCTCCAGCTGAAATCGATTTGCGACAAATGCGAACTGTC 360  
CGGACGTCATAGTTACCTTTACGAGGTCGACTTTAGCTAAACGCTGTTTACGCTTGACAG

a A C S I N G N A P A E I D L R Q M R T V -

CviRI MnlI NlaIII  
MslI CviJI DrdII CviJI  
AciI  
Fnu4HI  
TauI  
BsbI

361 ACTCCCATTTCGTATGCAAGGAGGCTGTGGTTTCATGTTGGGCTTTCTCTGGTGTTCGCCGA 420  
TGAGGGTAAGCATACGTTCTCCGACACCAAGTACAACCCGAAAGAGACCACAACGGCGT

a T P I R M Q G G C G S C W A F S G V A A -

HinFI AluI CviJI DpnI  
TfiI CviJI MwoI TaaI BstYI  
Sau3AI AlwI Tsp509I

421 ACTGAATCAGCTTATTTGGCTTACCGTAATCAATCATTGGATCTTGCTGAACAAGAATTA 480  
TGACTTAGTCGAATAAACCGAATGGCATTAGTTAGTAACCTAGAACGACTTGTCTTAAT

a T E S A Y L A Y R N Q S L D L A E Q E L -

BsaAI  
FokI  
PmlI  
MaeII  
HphI

TaqI BsbI TaaI NlaIII CjeI

481 GTCGATTGTGCTTCCCAACACGGTTGTCATGGTGATACCATTCACGTGGTATTGAATAC 540  
CAGCTAACACGAAGGGTTGTGCCAACAGTACCACTATGGTAAGGTGCACCATAACTTATG

a V D C A S Q H G C H G D T I P R G I E Y -

AluI MaeII  
CviJI ClaI BssSI  
CjeI MslI BstXI MneI TaqI CviRI

541 ATCCAACATAATGGTGTGTCCTCAAGAAAGCTACTATCGATACGTTGCACGAGACAATCA 600  
TAGGTTGTATTACCACAGCAGGTTCTTTTCGATGATAGCTATGCAACGTGCTCTTGTAGT

a I Q H N G V V Q E S Y Y R Y V A R E Q S -

AclI ApoI  
MaeII Tsp509I  
CviRI CjeI  
NlaIII

601 TGCCGACGACCAAAATGCACAACGTTTCGGTATCTCAAATATGCCAAATTTACCCACCA 660  
ACGGCTGCTGGTTTACGTGTTGCAAAGCCATAGAGTTTGATAACGGTTTAAATGGGTGGT

a C R R P N A Q R F G I S N Y C Q I Y P P -

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AluI  
CviJI  
CjeI  
HindIII  
HpyI78III  
ApoI  
Tsp509I  
CviJI  
BceI  
Eco47III  
HaeII  
HhaI  
RleAI

661 AATGTAACAAATTCGTGAAGCTTTGGCTCAAACCCACAGCGCTATTGCCGTCATTATT 720  
-----+-----+-----+-----+-----+  
TTACATTGTTTAAAGCACTTCGAAACCGAGTTTGGGTGTCGCGATAACGGCAGTAATAA

a N V N K I R E A L A Q T H S A I A V I I -

CviJI  
HaeIII  
BccI  
EaeI  
GdiII  
SfaNI  
BsmI  
HgaI  
MslI  
ThaI

721 GGCATCAAAGATTTTAGACGCATTCCGTCATTATGATGGCCGAACAATCATTCACGCGAT 780  
-----+-----+-----+-----+-----+  
CCGTAGTTTCTAAATCTGCGTAAGGCAGTAATACTACCGGCTTGTTAGTAAGTTGCGCTA

a G I K D L D A F R H Y D G R T I I Q R D -

BstEII  
MaeIII  
HincII  
MaeIII  
TaaI  
DraIII

781 AATGGTTACCAACCAAACTATCAGCTGTCAACATTGTTGGTTACAGTAACGCACAAGGT 840  
-----+-----+-----+-----+-----+  
TTACCAATGGTTGGTTTGATAGTGCGACAGTTGTAACAACCAATGTCATTGCGTGTTC

a N G Y Q P N Y H A V N I V G Y S N A Q G -

CjeI  
TaaI  
BciVI  
CjePI  
AlwI  
RsaI  
SunI  
DpnI  
Sau3AI  
TaqI  
HgiEII  
MunI  
Tsp509I  
MaeIII  
CjePI  
HphI  
BbvI  
TaaI  
CjeI

841 GTCGATTATTTGGATCGTACGAAACAGTTGGGATACCAATTGGGGTGATAATGGTTACGGT 900  
-----+-----+-----+-----+-----+  
CAGCTAATAACCTAGCATGCTTTGTCAACCCTATGGTTAACCCTACTATTACCAATGCCA

a V D Y W I V R N S W D T N W G D N G Y G -

Fnu4HI  
TseI  
ClaI  
TaqI  
Bsp24I  
CjePI  
CjeI  
MboII  
NdeI

901 TATTTTGCTGCCAACATCGATTGATGATGATTGAAGAATATCCATATGTTGTCATTCTC 960  
-----+-----+-----+-----+-----+  
ATAAAACGACGGTTGTAGCTAACTACTACTAACTTCTTATAGGTATACAACAGTAAGAG

a Y F A A N I D L M M I E E Y P Y V V I L -

TAA  
961 --- 963  
ATT



**FIGURE 8:** Sequence of full mutant DerP1 including pre-protein. Active site mutation Cys 132→Ala 132, corresponding to Cys34→Ala34 of the mature protein). Sequence includes coding (listed as SEQ ID NO. [[5]]6) and complementary DNA, and amino acid sequences (listed as SEQ ID NO. [[6]]1).

```
ATGAAAATTGTTTTGGCCATCGCCTCATTGTTGGCATTGAGCGCTGTTTATGCTCGTCCA 60
-----+-----+-----+-----+-----+-----+
TACTTTTAACAAAACCGGTAGCGGAGTAACAACCGTAACTCGCGACAAATACGAGCAGGT
M K I V L A I A S L L A L S A V Y A R P 20

TCATCGATCAAACTTTTGAAGAATACAAAAAGCCTTCAACAAAAGTTATGCTACCTTC 120
-----+-----+-----+-----+-----+-----+
AGTAGCTAGTTTTGAAAACCTTCTTATGTTTTTTCGGAAGTTGTTTTCAATACGATGGAAG
S S I K T F E E Y K K A F N K S Y A T F 40

GAAGATGAAGAAGCTGCCCCGTAAAACTTTTTTGAATCAGTAAAATATGTTCAATCAAAT 180
-----+-----+-----+-----+-----+-----+
CTTCTACTTCTTCGACGGGCATTTTTGAAAACCTTAGTCATTTTATACAAGTTAGTTTA
E D E E A A R K N F L E S V K Y V Q S N 60

GGAGGTGCCATCAACCATTGTCCGATTTGTCGTTGGATGAATTCAAAAACCGATTTTTTG 240
-----+-----+-----+-----+-----+-----+
CCTCCACGGTAGTTGGTAAACAGGCTAAACAGCAACCTACTTAAGTTTTTGGCTAAAAAC
G G A I N H L S D L S L D E F K N R F L 80

ATGAGTGCAGAAGCTTTTGAACACCTCAAACTCAATTCGATTTGAATGCTGAACTAAC 300
-----+-----+-----+-----+-----+-----+
TACTCACGTCTTCGAAAACCTTGTGGAGTTTTTGAGTTAAGCTAACTTACGACTTTGATTG
M S A E A F E H L K T Q F D L N A E T N 100

GCCTGCAGTATCAATGGAAATGCTCCAGCTGAAATCGATTTGCGACAAATGCGAACTGTC 360
-----+-----+-----+-----+-----+-----+
CGGACGTCATAGTTACCTTTACGAGGTCGACTTTAGCTAAACGCTGTTTACGCTTGACAG
A C S I N G N A P A E I D L R Q M R T V 120

ACTCCCATTTCGTATGCAAGGAGGCTGTGGTTCAGCTTGGGCTTTCTCTGGTGTGCGCA 420
-----+-----+-----+-----+-----+-----+
TGAGGGTAAGCATACGTTCCCTCCGACACCAAGTCGAACCCGAAAGAGACCACAACGGCGT
T P I R M Q G G C G S A W A F S G V A A 140

ACTGAATCAGCTTATTTGGCTTACCGTAATCAATCATTTGGATCTTGCTGAACAAGAATTA 480
-----+-----+-----+-----+-----+-----+
TGACTTAGTCGAATAAACGAATGGCATTAGTTAGTAACCTAGAACGACTTGTTCCTTAAT
T E S A Y L A Y R N Q S L D L A E Q E L 160
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GTCGATTGTGCTTCCCAACACGGTTGTCATGGTGATACCATTCACGTGGTATTGAATAC 540  
-----+-----+-----+-----+-----+-----+-----+  
CAGCTAACACGAAGGGTTGTGCCAACAGTACCCTATGGTAAGGTGCACCATAACTTATG  
V D C A S Q H G C H G D T I P R G I E Y 180  
  
ATCCAACATAATGGTGTGCTCCAAGAAAGCTACTATCGATACGTTGCACGAGAACAAATCA 600  
-----+-----+-----+-----+-----+-----+-----+  
TAGGTTGTATTACCACAGCAGGTTCTTTTCGATGATAGCTATGCAACGTGCTCTTGTTAGT  
I Q H N G V V Q E S Y Y R Y V A R E Q S 200  
  
TGCCGACGACCAAATGCACAACGTTTCGGTATCTCAAACCTATTGCCAAATTTACCCACCA 660  
-----+-----+-----+-----+-----+-----+-----+  
ACGGCTGCTGGTTTACGTGTTGCAAAGCCATAGAGTTTGATAACGGTTTAAATGGGTGGT  
C R R P N A Q R F G I S N Y C Q I Y P P 220  
  
AATGTAAACAAAATTCGTGAAGCTTTGGCTCAAACCCACAGCGCTATTGCCGTCATTATT 720  
-----+-----+-----+-----+-----+-----+-----+  
TTACATTTGTTTTAAGCACTTCGAAACCGAGTTTGGGTGTCGCGATAACGGCAGTAATAA  
N V N K I R E A L A Q T H S A I A V I I 240  
  
GGCATCAAAGATTTAGACGCATTCCGTCATTATGATGGCCGAACAATCATTCAACGCGAT 780  
-----+-----+-----+-----+-----+-----+-----+  
CCGTAGTTTCTAAATCTGCGTAAGGCAGTAATACTACCGGCTTGTTAGTAAGTTGCGCTA  
G I K D L D A F R H Y D G R T I I Q R D 260  
  
AATGGTTACCAACCAAACCTATCACGCTGTCAACATTGTTGGTTACAGTAACGCACAAGGT 840  
-----+-----+-----+-----+-----+-----+-----+  
TTACCAATGGTTGGTTTGATAGTGCGACAGTTGTAACAACCAATGTCATTGCGTGTTCCA  
N G Y Q P N Y H A V N I V G Y S N A Q G 280  
  
GTCGATTATTGGATCGTACGAAACAGTTGGGATACCAATTGGGGTGATAATGGTTACGGT 900  
-----+-----+-----+-----+-----+-----+-----+  
CAGCTAATAACCTAGCATGCTTTGTCAACCCTATGGTTAACCCCACTATTACCAATGCCA  
V D Y W I V R N S W D T N W G D N G Y G 300  
  
TATTTTGCTGCCAACATCGATTTGATGATGATTGAAGAATATCCATATGTTGTCATTCTC 960  
-----+-----+-----+-----+-----+-----+-----+  
ATAAAACGACGGTTGTAGCTAACTACTACTAACTTCTTATAGGTATACAACAGTAAGAG  
Y F A A N I D L M M I E E Y P Y V V I L 320  
  
TAA  
---  
ATT

**FIGURE 9:** Sequence of full mutant DerP1 including pre-protein containing a deletion at the propeptide cleavage site (NAET). Sequence includes coding (listed as SEQ ID NO. [[1]]7) and complementary DNA, and amino acid sequences (listed as SEQ ID NO. 2).

```
ATGAAAATTGTTTTGGCCATCGCCTCATTGTTGGCATTGAGCGCTGTTTATGCTCGTCCA 60
-----+-----+-----+-----+-----+-----+
TACTTTTAACAAAACCGGTAGCGGAGTAACAACCGTAACTCGCGACAAATACGAGCAGGT
M K I V L A I A S L L A L S A V Y A R P 20

TCATCGATCAAAACTTTTGAAGAATACAAAAAGCCTTCAACAAAAGTTATGCTACCTTC 120
-----+-----+-----+-----+-----+
AGTAGCTAGTTTTGAAAACCTTCTTATGTTTTTTCGGAAGTTGTTTTCAATACGATGGAAG
S S I K T F E E Y K K A F N K S Y A T F 40

GAAGATGAAGAAGCTGCCCCGTAAAAACTTTTTGGAATCAGTAAAATATGTTCAATCAAAT 180
-----+-----+-----+-----+-----+
CTTCTACTTCTTCGACGGGCATTTTTGAAAACCTTAGTCATTTTATACAAGTTAGTTTA
E D E E A A R K N F L E S V K Y V Q S N 60

GGAGGTGCCATCAACCATTGTCCGATTTGTCGTTGGATGAATTCAAAAACCGATTTTTTG 240
-----+-----+-----+-----+-----+
CCTCCACGGTAGTTGGTAAACAGGCTAAACAGCAACCTACTTAAGTTTTTGGCTAAAAAC
G G A I N H L S D L S L D E F K N R F L 80

ATGAGTGCAGAAGCTTTTGAACACCTCAAACTCAATTCGATTTG AAC 300
-----+-----+-----+-----+-----+
TACTCACGTCTTCGAAAACCTGTGGAGTTTGTAGTTAAGCTAAAC TTG
M S A E A F E H L K T Q F D L N 100

GCCTGCAGTATCAATGGAAATGCTCCAGCTGAAATCGATTTGCGACAAATGCGAACTGTC 360
-----+-----+-----+-----+-----+
CGGACGTCATAGTTACCTTTACGAGGTCGACTTTAGCTAAACGCTGTTTACGCTTGACAG
A C S I N G N A P A E I D L R Q M R T V 120

ACTCCCATTTCGTATGCAAGGAGGCTGTGGTTCATGTTGGGCTTTCTCTGGTGTTGCCGCA 420
-----+-----+-----+-----+-----+
TGAGGGTAAGCATACGTTCCCTCCGACACCAAGTACAACCCGAAAGAGACCACAACGGCGT
T P I R M Q G G C G S C W A F S G V A A 140

ACTGAATCAGCTTATTTGGCTTACCGTAATCAATCATTGGATCTTGCTGAACAAGAATTA 480
-----+-----+-----+-----+-----+
TGACTTAGTCGAATAAACCGAATGGCATTAGTTAGTAACCTAGAACGACTTGTTCTTAAT
T E S A Y L A Y R N Q S L D L A E Q E L 160
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GTCGATTGTGCTTCCCAACACGGTTGTCATGGTGATACCATTCACGTGGTATTGAATAC 540  
-----+-----+-----+-----+-----+-----+-----+  
CAGCTAACACGAAGGGTTGTGCCAACAGTACCCTATGGTAAGGTGCACCATAACTTATG  
V D C A S Q H G C H G D T I P R G I E Y 180

ATCCAACATAATGGTGTCTGCCAAGAAAGCTACTATCGATACGTTGCACGAGAACAAATCA 600  
-----+-----+-----+-----+-----+-----+-----+  
TAGGTTGTATTACCACAGCAGGTTCTTTTCGATGATAGCTATGCAACGTGCTCTTGTTAGT  
I Q H N G V V Q E S Y Y R Y V A R E Q S 200

TGCCGACGACCAAATGCACAACGTTTCGGTATCTCAAACCTATTGCCAAATTTACCCACCA 660  
-----+-----+-----+-----+-----+-----+-----+  
ACGGCTGCTGGTTTACGTGTTGCAAAGCCATAGAGTTTGATAACGGTTTAAATGGGTGGT  
C R R P N A Q R F G I S N Y C Q I Y P P 220

AATGTAAACAAAATTCGTGAAGCTTTGGCTCAAACCCACAGCGCTATTGCCGTCATTATT 720  
-----+-----+-----+-----+-----+-----+-----+  
TTACATTTGTTTTAAGCACTTCGAAACCGAGTTTGGGTGTCGCGATAACGGCAGTAATAA  
N V N K I R E A L A Q T H S A I A V I I 240

GGCATCAAAGATTTAGACGCATTCCGTCATTATGATGGCCGAACAATCATTCAACGCGAT 780  
-----+-----+-----+-----+-----+-----+-----+  
CCGTAGTTTCTAAATCTGCGTAAGGCAGTAATACTACCGGCTTGTTAGTAAGTTGCGCTA  
G I K D L D A F R H Y D G R T I I Q R D 260

AATGGTTACCAACCAAACCTATGCTGCTGTCAACATTGTTGGTTACAGTAACGCACAAGGT 840  
-----+-----+-----+-----+-----+-----+-----+  
TTACCAATGGTTGGTTTGATAGTGCGACAGTTGTAACAACCAATGTCATTGCGTGTTCCA  
N G Y Q P N Y A A V N I V G Y S N A Q G 280

GTCGATTATTGGATCGTACGAAACAGTTGGGATACCAATTGGGGTGATAATGGTTACGGT 900  
-----+-----+-----+-----+-----+-----+-----+  
CAGCTAATAACCTAGCATGCTTTGTCAACCCTATGGTTAACCCCACTATTACCAATGCCA  
V D Y W I V R N S W D T N W G D N G Y G 300

TATTTTGCTGCCAACATCGATTTGATGATGATTGAAGAATATCCATATGTTGTCATTCTC 960  
-----+-----+-----+-----+-----+-----+-----+  
ATAAAACGACGGTTGTAGCTAACTACTACTAACTTCTTATAGGTATACAACAGTAAGAG  
Y F A A N I D L M M I E E Y P Y V V I L 320

TAA  
---  
ATT

**FIGURE 10:** Sequence of full mutant DerP1 including pre-protein. Active site mutation His 268 → Ala 268, corresponding to His170→Ala170 of the mature protein). Sequence includes coding (listed as SEQ ID NO. [[3]]8) and complementary DNA, and amino acid sequences (listed as SEQ ID NO. [[4]]3).

```
ATGAAAATTGTTTTGGCCATCGCCTCATTGTTGGCATTGAGCGCTGTTTATGCTCGTCCA 60
-----+-----+-----+-----+-----+-----+
TACTTTTAACAAAACCGGTAGCGGAGTAACAACCGTAACTCGCGACAAATACGAGCAGGT
M K I V L A I A S L L A L S A V Y A R P 20

TCATCGATCAAAACTTTTGAAGAATACAAAAAGCCTTCAACAAAAGTTATGCTACCTTC 120
-----+-----+-----+-----+-----+-----+
AGTAGCTAGTTTTGAAAACCTTCTTATGTTTTTTTCGGAAGTTGTTTTCAATACGATGGAAG
S S I K T F E E Y K K A F N K S Y A T F 40

GAAGATGAAGAAGCTGCCCCGTAAAAACTTTTTGGAATCAGTAAAATATGTTCAATCAAAT 180
-----+-----+-----+-----+-----+-----+
CTTCTACTTCTTCGACGGGCATTTTTGAAAACCTTAGTCATTTTATACAAGTTAGTTTA
E D E E A A R K N F L E S V K Y V Q S N 60

GGAGGTGCCATCAACCATTGTGCCGATTGTGCGTTGGATGAATTCAAAAACCGATTTTTTG 240
-----+-----+-----+-----+-----+-----+
CCTCCACGGTAGTTGGTAAACAGGCTAAACAGCAACCTACTTAAGTTTTTGGCTAAAAAC
G G A I N H L S D L S L D E F K N R F L 80

ATGAGTGCAGAAGCTTTTGAACACCTCAAAACTCAATTCGATTTGAATGCTGAAACTAAC 300
-----+-----+-----+-----+-----+-----+
TACTCACGTCTTCGAAAACCTGTGGAGTTTTGAGTTAAGCTAAACTTACGACTTTGATTG
M S A E A F E H L K T Q F D L N A E T N 100

GCCTGCAGTATCAATGGAAATGCTCCAGCTGAAATCGATTTGCGACAAATGCGAACTGTC 360
-----+-----+-----+-----+-----+-----+
CGGACGTCATAGTTACCTTTACGAGGTGCGACTTTAGCTAAACGCTGTTTACGCTTGACAG
A C S I N G N A P A E I D L R Q M R T V 120

ACTCCCATTTCGTATGCAAGGAGGCTGTGGTTCATGTTGGGCTTTCTCTGGTGTGCGCGCA 420
-----+-----+-----+-----+-----+-----+
TGAGGGTAAGCATACGTTCCCTCCGACACCAAGTACAACCCGAAAGAGACCACAACGGCGT
T P I R M Q G G C G S C W A F S G V A A 140

ACTGAATCAGCTTATTTGGCTTACCGTAATCAATCATTGGATCTTGCTGAACAAGAATTA 480
-----+-----+-----+-----+-----+-----+
TGACTTAGTCGAATAAACCGAATGGCATTAGTTAGTAACCTAGAACGACTTGTTCTTAAT
T E S A Y L A Y R N Q S L D L A E Q E L 160
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Application No.: 09/554,860  
Amdt. Dated December 5, 2005  
Reply to Office Action of June 6, 2005  
Annotated Sheet Showing Changes

GTCGATTGTGCTTCCCAACACGGTTGTCATGGTGATACCATTCCACGTGGTATTGAATAC 540  
-----+-----+-----+-----+-----+-----+-----+  
CAGCTAACACGAAGGGTTGTGCCAACAGTACCACTATGGTAAGGTGCACCATAACTTATG  
V D C A S Q H G C H G D T I P R G I E Y 180

ATCCAACATAATGGTGTCTGTCCTCAAGAAAGCTACTATCGATACGTTGCACGAGAACAATCA 600  
-----+-----+-----+-----+-----+-----+-----+  
TAGGTTGTATTACCACAGCAGGTTCTTTTCGATGATAGCTATGCAACGTGCTCTTGTTAGT  
I Q H N G V V Q E S Y Y R Y V A R E Q S 200

TGCCGACGACCAAATGCACAACGTTTCGGTATCTCAAACCTATTGCCAAATTTACCCACCA 660  
-----+-----+-----+-----+-----+-----+-----+  
ACGGCTGCTGGTTTACGTGTTGCAAAGCCATAGAGTTTGATAACGGTTTAAATGGGTGGT  
C R R P N A Q R F G I S N Y C Q I Y P P 220

AATGTAAACAAAATTCGTGAAGCTTTGGCTCAAACCCACAGCGCTATTGCCGTCATTATT 720  
-----+-----+-----+-----+-----+-----+-----+  
TTACATTTGTTTAAAGCACTTCGAAACCGAGTTTGGGTGTCGCGATAACGGCAGTAATAA  
N V N K I R E A L A Q T H S A I A V I I 240

GGCATCAAAGATTTAGACGCATTCCGTCATTATGATGGCCGAACAATCATTCAACGCGAT 780  
-----+-----+-----+-----+-----+-----+-----+  
CCGTAGTTTCTAAATCTGCGTAAGGCAGTAATACTACCGGCTTGTTAGTAAGTTGCGCTA  
G I K D L D A F R H Y D G R T I I Q R D 260

AATGGTTACCAACCAAACTAT**GCT**GCTGTCAACATTGTTGGTTACAGTAACGCACAAGGT 840  
-----+-----+-----+-----+-----+-----+-----+  
TTACCAATGGTTGGTTTGTAT**CGA**CGACAGTTGTAACAACCAATGTCATTGCGTGTTCCA  
N G Y Q P N Y **A** A V N I V G Y S N A Q G 280

GTCGATTATTGGATCGTACGAAACAGTTGGGATACCAATTGGGGTGATAATGGTTACGGT 900  
-----+-----+-----+-----+-----+-----+-----+  
CAGCTAATAACCTAGCATGCTTTGTCAACCCTATGGTTAACCCCACTATTACCAATGCCA  
V D Y W I V R N S W D T N W G D N G Y G 300

TATTTTGCTGCCAACATCGATTTGATGATGATTGAAGAATATCCATATGTTGTCATTCTC 960  
-----+-----+-----+-----+-----+-----+-----+  
ATAAAACGACGGTTGTAGCTAAACTACTACTAACTTCTTATAGGTATACAACAGTAAGAG  
Y F A A N I D L M M I E E Y P Y V V I L 320

TAA

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ATT

**FIGURE 11:** Amino acid sequence (SEQ ID NO: [[7]]4) for the mutant DerP1 as encoded by pNIV4842, and shown in figure 5.

1 MLLVNQSHQG FNKEHTSKMV SAIVLYVLLA AAAHSAFAAD PRPSSIKTFE  
51 EYKKA FNKSY ATFEDEEAAR KNFLESVKYV QSNGGAINHL SDLSLDEFKN  
101 RFLMSAEAFE HLKTQFDLNA CSINGNAPAE IDLRQMRTVT PIRMQGGCGS  
151 CWA FSGVAAT ESAYLAYRNQ SLDLAEQELV DCASQHGCHG DTIPRGIEYI  
201 QHNGVVQESY YRYVAREQSC RRPNAQRFGI SNYCQIYPPN ANKIREALAQ  
251 THSAIAVIIG IKDLDAFRHY DGRTHIQRDN GYQPNYHAVN IVGYSNAQGV  
301 DYWIVRNSWD TNWGDNGYGY FAANIDLMMI EEYPYVVIL\*

**FIGURE 12:** Amino acid sequence (SEQ ID NO: [[8]]5) for the mutant DerP1 as encoded by pNIV4843, and shown in figure 6.

1 MLLVNQSHQG FNKEHTSKMV SAIVLYVLLA AAAHSAFAAD PRPSSIKTFE  
51 EYKKAFNKSY ATFEDEEAAR KNFLESVKYV QSNGGAINHL SDLSLDEFKN  
101 RFLMSAEAFE HLKTQFDLNA ETNACSINGN APAEIDLRQM RTVTPIRMQG  
151 GCGSAWAFSG VAATESAYLA YRNQSLDLAE QELVDCASQH GCHGDTIPRG  
201 IEYIQHNGVV QESYYRYVAR EQSCRRPNAQ RFGISNYCQI YPPNANKIRE  
251 ALAQTHSAIA VIIGIKDLDA FRHYDGRTII QRDNGYQPNY HAVNIVGYSN  
301 AQGVVDYWIVR NSWDTNWGDN GYGYFAANID LMMIEEYPYV VIL\*